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Flashbulb memories in social groups: A comparative test–retest study of the memory of French President Mitterrand's death in a French and a Belgian group

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Flashbulb memories are vivid and long-lasting memories for the reception context of an important public event (Brown & Kulik, 1977). They are assumed to be triggered by emotional factors (i.e., intensity of emotional feeling, appraisal of the original event) and by social factors (i.e., social sharing of the news, following media debate about the event). The present study investigated the memory for the death of the former President of France F. Mitterrand in two social groups, i.e., French and Belgian people. This study tests whether the flashbulb memory attributes, the memory for the original event, and the impact of the emotional and social determinants of flashbulb memory differed across groups. The results indicated that the flashbulb memory for Mitterrand's death is affected by group provenance, as French people showed higher levels of recall for the flashbulb memory attributes and their determinants than Belgian people. Time impaired recollections in both groups, so that flashbulb memories appear prone to decay and share the same destiny as ordinary memories. The theoretical construct of concern—as the most basic antecedent of emotional experiences and its related appraisal (Frijda, 1994)—is discussed in order to explain the differences in memory of the two social groups.

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About twenty years ago, Brown and Kulik (1977) defined flashbulb memories as vivid, detailed, and long-lasting memories for the circumstances in which people learned about a shocking public event (for instance, the assassinations of John F. Kennedy, Malcolm X, or Martin Luther King). According to Brown and Kulik, people retain the memory for the reception context in which they first heard about the public event. In other words, people remember vividly and for a long time not just the original event, but features of the reception context, such as when they first learned about the event, where they were, what they were doing and with whom, the informant, and the aftermath of the event (Bohannon, 1988; Brown & Kulik, 1977; Conway et al., 1994; Larsen, 1992). Flashbulb memory studies are usually for important public events, although there are some studies showing that people have very vivid memories related to personal events (Pillemer, Goldsmith, Panter, & White, 1988; Rubin & Kozin, 1984).

According to Brown and Kulik (1977), the two main determinants of flashbulb memories are surprise and importance–consequentiality of the original event. If an event triggers both a great level of surprise and is rated as consequential, it is supposed to be remembered for a long time. To illustrate, in the United States, Brown and Kulik (1977) investigated flashbulb memories of African-American and Caucasian participants about the deaths of Martin Luther King and Malcolm X, two events for which the level of consequentiality was substantially different in the two groups considered. The results showed that African-American participants had significantly more flashbulb memories for these events than Caucasian participants (Brown & Kulik, 1977). Brown and Kulik (1977) explained these results by postulating a special encoding mechanism in the brain that is triggered by the original event and that is assumed to make the memories vivid and long-lasting (Livingston, 1967). Other authors account for the special encoding hypothesis by emphasising the role of surprise, importance–consequentiality, and emotional feeling states in general (Conway, 1995; Pillemer, 1984).

The special encoding hypothesis has been criticised by authors stressing the importance of reconstructive post-encoding factors. Their theoretical perspective is also known as constructivist (Christianson, 1989; McCloskey, Wible, & Cohen, 1988; Neisser, 1982; Wright, 1993). According to these authors, the rehearsal of the original experience plays an important role in yielding flashbulb memories, both in their maintenance and in their formation. Flashbulb memories are viewed as not particularly vivid and long-lasting. Instead, they are still inaccurate and prone to decay, as rehearsal processes make them continuously modified. As with any ordinary memories, these memories get distorted and biased over time (Christianson, 1989; Schmolck, Buffalo, & Squire, 2000; Wright, 1993).

Rehearsal encompasses different processes such as following event-related media debates, talking about the event with others, and thinking of the original event. In other words, rehearsal deals with media communication, social sharing and rumination about the experience. The constructivist approach relies considerably on societal factors to explain the formation and maintenance of flashbulb memories (Wright & Gaskell, 1995). However, this constructivist perspective also acknowledges the direct impact of emotion, surprise, and importance–consequentiality (i.e., the encoding variables) as concurrent explanatory factors that act together with rehearsal in the formation of flashbulb memories. In this perspective, emotion keeps its effect on memory after the original event has occurred through the social sharing of and rumination about the event (Finkenauer et al., 1998). Studies about social sharing and rumination have shown that these rehearsal factors are associated with the intensity of the emotional feeling state felt after an event (Luminet et al., 2000; Luminet, Zech, Rimé, & Wagner, 2000; Rimé et al., 1998; Rimé, Philippot, Boca, & Mesquita, 1992). It follows that emotions always represent an important determinant of flashbulb memories. People remember a given experience for a long time, because they felt emotionally involved when it happened and rehearsed it as time passed. Emotion is supposed to be related both directly and indirectly to flashbulb memories and to exert its effect both at the time the original event is encoded and during its rehearsal.

EMOTIONAL DETERMINANTS OF FLASHBULB MEMORIES

Many studies on the formation and maintenance of flashbulb memories stress the link between emotion and memory (Brown & Kulik, 1977; Conway et al., 1994; Pillemer, 1984; Ruiz-Vargas, 1993). An important issue is to explain why people retain different memories for the same emotional

experience. As proposed by Brown and Kulik (1977), people are differently affected by an event, because of the different level of consequentiality ascribed to it. In the Brown and Kulik study, the concept of consequentiality is an implementation of the concept of biological significance proposed by Livingston (1967). In an evolutionary perspective, some events can be more effective for the survival of the species, others can be less effective; some events can enhance the safety of human beings, others can be harmful. People react differently in consequence of their evaluation of the potential enhancement or harm carried by an event. In every context, flashbulb memories arise when an event is evaluated as highly consequential or, in other terms, as highly significant for the safety of people living in that context. Thus, the high degree of consequentiality promotes a different encoding, which leads to a more vivid and long-lasting memory for the event (Brown & Kulik, 1977; Guy & Cahill, 1999).

The impact of people's evaluations in eliciting emotional experiences has been taken into account by the cognitive theories of emotion. Appraisal theorists suggest that emotions are differentiated by the cognitive evaluations of the original event, that is, the so-called appraisals. These appraisals are automatic processings of a given stimulus that determine the onset of differentiated subjective feelings (Frijda, 1987; Frijda, Kuipers, & ter Schure, 1989; Scherer, 1984, 1997; Smith & Ellsworth, 1985). People appraise the original event differently, which then gives rise to different emotional feelings for the same event.

Recently, a new model has been tested which emphasises the role of cognitive appraisals in eliciting flashbulb memories (Finkenauer et al., 1998). The authors focus on the novelty and importance–consequentiality appraisals. They notice that, since Brown and Kulik, the appraisal of novelty has been neglected by flashbulb memory scholars. Brown and Kulik (1977) also assessed the role of consequentiality, even though they did not clearly discriminate between this appraisal and the emotion itself. According to them, flashbulb memories are elicited because people perceive that the occurring event has some consequences for their life (Brown & Kulik, 1977). Finkenauer et al. (1998) tested a model where novelty is the direct determinant of surprise, while importance–consequentiality yields emotional feeling states, and thereby modulates the rehearsal of the event. In this model, emotional feeling states and their cognitive appraisals are structurally linked to yield flashbulb memories. However, the impact of appraisals and emotion operate mainly through the rehearsal of the event. By rehearsing the event, people also maintain the memory for the reception context (i.e., the flashbulb memory attributes) (Finkenauer et al., 1998).

SOCIAL DETERMINANTS OF FLASHBULB MEMORIES

Besides the approach just outlined relying mainly on intra-individual processes to explain flashbulb memories, there is a different perspective stressing the impact of societal factors (Wright & Gaskell, 1995). The literature on collective memory suggests that flashbulb memories are in part the outcomes of shared experiences happening in social contexts (Bellelli, 1999; Pennebaker, Paez, & Rimé, 1997). The social sharing and the repeated thinking about a public event shape the content and features of the memory. The more emotional and important an event is for the social group, the more likely people will rehearse it (Finkenauer, Gisle, & Luminet, 1997; Pennebaker et al., 1997). Thus, people discuss and think about a public experience in conformity with the interests and emotional involvement of the group to which they belong (Jodelet, 1998). In a broader sense, people discuss and rehearse especially what is relevant for their country or social group (Robinson, 1996). Gaskell and Wright (1997) find in Tajfel's social identity theory (1981) and in Turner's social categorisation theory (1987) the foundation for the functional analysis of flashbulb memory with reference to the self-construction process. According to the social identity theory, people strive to construct a positive self-concept. This process encompasses two aspects, their personal identity and their social identity. The personal identity is built of cognitions about the individual herself or himself, while the social identity is built of cognitions about the groups to which the individual belongs. Gaskell and Wright (1997) point out that the memory for political events contributes to identify each person as an individual and as a member of a social group. Memory for political events shapes individuals' personal and social identity. Therefore, memories remain vivid and long-lasting, such as flashbulb memories, ''because they contribute positively to personal and social identity and thus serve to maintain or enhance self-esteem'' (Gaskell & Wright, 1997, p. 180).

From these approaches, it becomes clear that flashbulb memories are not just the outcomes of an intra-individual remembering process. Rather they represent truly social experiences and are shaped by the constraints of the context in which the original events occur. In others words, flashbulb memories should largely depend on the emotion experienced by social groups. As previously shown, rehearsal is a social process which contributes to the elaboration and maintenance of flashbulb memories for a specific public event. The way rehearsal shapes the memory is twofold. First, people share the event and think of it in different ways, according to their group's habits and requirements. Second, the way the event is shared and ruminated on will also depend on the availability of mass media information and the way TV broadcasts, radio channels, and newspapers build up the content of public debates about the news. Again, these reflect the group's habits and requirements (Bellelli, 1999; Bellelli, Leone, & Curci, 1998).

OVERVIEW AND HYPOTHESES

The first aim of the present study is to investigate flashbulb memories among two social groups. No model about the formation and maintenance of flashbulb memories is being tested, although we bear in mind that these memories correspond to a well assessed pattern of remembering and it is accounted for by some specific encoding and rehearsal variables (Bellelli, 1999; Brown & Kulik, 1977; Conway et al., 1994; Finkenauer et al., 1998). As the literature suggests, we define flashbulb memories with reference to so-called canonical categories of the reception context, including time, location, other people present, details of the reception context, ongoing activity, and changes in ongoing activity (Bohannon, 1988; Brown & Kulik, 1977; Conway et al., 1994; Neisser & Harsch, 1992). We focus also on the changes in ongoing activity because they are indicative of the disruptiveness of the situation with respect to the ordinary scripts of daily life. In fact, previous research work (Bohannon, 1988; Winograd & Killinger, 1983; Wright & Gaskell, 1992) suggested that the memorability of some events could be partially due to the changes these events prompt in the course of ordinary life.

The original event of the present study was the death of the former French President, François Mitterrand, on January 8, 1996.[1] Mitterrand was an important politician and he was very familiar to French citizens. Born in 1916, he became a minister immediately after the end of World War II. Leader of the Left since the beginning of the 1970s, Mitterrand was elected as President of France in 1981. He was the first Socialist President in that country since the 1950s. He was then re-elected in 1988 and terminated his mandate in 1995, only a few months before he died. He had then been the President of France for 14 years. Although F. Mitterrand suffered from prostate cancer for a couple of years and his cancer was in its terminal state, his death came as a big surprise to French people. This was reflected in the enormous amount of news coverage following his death. French citizens felt very upset by this event, independent of their personal opinion about Mitterrand's politics.

The memory for Mitterrand's death was examined in two French-speaking groups, of French and Belgian citizens, at two different times, one at 2 months after the event and the other 1 year later. The present study aimed to examine more systematically how flashbulb memories vary across different social groups. Specifically, flashbulb memory attributes, confidence in flashbulb memory, memory for the original event, emotional determinants, rehearsal, and previous knowledge about Mitterrand among French and Belgian citizens were compared.

Mitterrand's politics were a very relevant matter for French society. French citizens directly experienced the effects of Mitterrand's politics, and they had been directly concerned by his political choices. For Belgian citizens, Mitterrand's politics were only a foreign matter with much less effect on their societal life. We expected that the memory for the original event would vary across the land of origin of the groups, at both times of measurement. We also hypothesised that the memory for the reception context would vary across groups, in that French citizens would remember the features of the context in which they learned about the event better than Belgians.

[1] Generally, the literature about flashbulb memories deals with unexpected and shocking public events. It has been argued that people can also retain photographic memories for expected events (Neisser, 1982). However the literature rarely addresses theoretical and empirical differences between autobiographical memories for expected and unexpected events. The present study attempts to examine whether the characteristics of flashbulb memories for an unexpected event hold for the memory for an expected event.

In other words, French citizens were expected to experience more detailed flashbulb memories for Mitterrand's death than Belgians did. Confidence is generally considered among the distinctive features of flashbulb memories, because people usually feel very confident about their answers when questioned about this kind of memory. Confidence contributes so noticeably to support the recollection of relevant public events, that it was even supposed to have some effects on the development of flashbulb memories (Bellelli, 1999; Neisser & Harsch, 1992). Thus, we expected that French citizens would be more confident about their recollections than Belgians.

Although the event is appraised on the same dimensions, the extent to which the cognitive appraisals are experienced may differ across groups. In other words, we expected the same appraisal dimensions (i.e., novelty and importance–consequentiality) to have an impact, but we expected them to have a stronger impact in the French than in the Belgian group.

Similarly to cognitive appraisals, we expected that the original news would yield the same pattern of negative emotional feeling states in the two groups. We hypothesised, however, that the *intensity* of the emotion would be greater for the French group than for the Belgian group. We also predicted that each group would rehearse the experience to a different degree, depending on their emotional involvement (Pennebaker et al., 1997). More precisely, the rehearsal would be more repetitive for French than for Belgians, given the direct relationship between emotion and rehearsal of the event in the structural models of formation and maintenance of flashbulb memories (Finkenauer et al., 1998). In the present study the measure of the rehearsal of the original event comes from three variables, including social sharing, rehearsal through the media, and mental rumination. Furthermore, social sharing encompasses global conversations about the original event, sharing specific facts of the original event, sharing emotional reactions, and sharing information about the reception context. We expected that the difference between French and Belgians would be slightly higher for sharing emotional reactions because of the greater emotional involvement of French citizens in the event.

Finally, the more people evaluate Mitterrand's politics as a prominent topic, the more they are interested in it, and the more they should know about it. Therefore we hypothesised that prior knowledge and interest in Mitterrand and his politics would be stronger for the French group than for the Belgian group, but we did not expect that the French would be globally more favourable towards Mitterrand than the Belgians.

The second aim of the study was to examine consistency of memory across time, as data collection at two different points in time allowed us to examine this question. Flashbulb memories were originally considered as long-lasting memories that remain vivid and detailed over time (Brown & Kulik, 1977). According to Pillemer (1998), the public impact of a news item and the media sensationalism contribute to the maintenance and consistency of some memories for public events. Christianson and Engelberg (1999) argued that the consistency of flashbulb memories is related to the degree of involvement and importance people experience for a given event. Based on these findings, we predicted that the consistency of the flashbulb attributes and the memory for the event would be higher for French citizens than for Belgians.

Despite the confidence people usually exhibit, flashbulb memories are not immune to forgetting (Christianson, 1989; Christianson & Engelberg, 1999; Weaver, 1993). Time has been found to decrease the accuracy of flashbulb attributes, while the ''memory for the central event is enhanced by the impressiveness of the news'' (Larsen, 1992, p. 61). As a consequence, time is expected to impair the memory for flashbulb attributes but not the memory for the event and the level of related confidence. We examined the impact of time on the ratings of emotion and importance, and expected that they would remain stable over time, because these estimates may depend on the perceived quality of the related memories (Christianson & Engelberg, 1999; Neisser, 1982). Similarly, we examined the impact of time on the other encoding factors (i.e., surprise and novelty) and on the variables corresponding to the ratings of social sharing, rehearsal by the media, rumination, and personal knowledge about Mitterrand.

Finally, in line with the idea that flashbulb memory does not imply the existence of a special memory mechanism (see Christianson, 1989; Conway, 1995; McCloskey et al., 1988) we predicted that, as with ordinary memories, flashbulb memories would decrease over time in a similar way for both the groups. Thus, no interaction effects of time by provenance were predicted on the flashbulb attributes and the memory for the

event scores. Similarly, we did not expect any interaction effect on the encoding and rehearsal factors.

METHOD

Design

Participants were French-speaking French and Belgian citizens. The independent variables were the provenance of the participants (i.e., French vs Belgian), and the phase of the data collection (i.e., the test–retest factor). We tested the memory of participants twice: (1) 1–2 months after Mitterrand's death, and (2) 1 year after the first data collection. The dependent variables are the measures of the flashbulb memory attributes. These attributes correspond to the canonical categories usually defining flashbulb memories, such as time, location, other people present, details of the reception context, ongoing activity, changes in ongoing activity, and other reception context details (Bohannon, 1988; Brown & Kulik, 1977; Conway et al., 1994; Finkenauer et al., 1998; Neisser & Harsch, 1992). We also considered as dependent variables measures of the memory for the original event (i.e., Mitterrand's death) and factors that are supposed to affect the flashbulb memory formation, such as the appraisals of novelty and importance–consequentiality, surprise, negative emotional feeling state, and rehearsal (Finkenauer et al., 1998).

Participants

A total of 362 French participants (54.7% of the total sample, M age = 29.4; SD = 12.3) and 302 Belgian participants (45.3% of the total sample, M age = 35.4; SD = 14.7) volunteered to participate in a study on memories and reactions related to Mitterrand's death. The first data collection took part 1–2 months after that event. One year after the first data collection, 34.5% of the participants (N = 229), completed the questionnaire a second time. A total of 124 participants of the retest-group (54.1%) were French (M age = 28.4; SD = 11.2), and 105 (45.8%) were Belgians (M age = 34.5; SD = 14.2). In the present paper, we will only consider those participants who took part in both data collections (i.e., N = 229 participants). Table 1 reports the characteristics of the sample, including gender frequencies.

TABLE 1
Sample characteristics as a function of group, gender, and time of data collection

Groups	*One to two months after the event* *n*	*Retest group* *n*
French		
Males	106	40
Females	256	84
Belgians		
Males	146	52
Females	156	53

Measures

The questionnaire is very similar to the one used by Finkenauer et al. (1998). One difference, however, is that it aimed at investigating the impact of surprise more closely by using a larger set of items. Some questions were also added concerning rumination on the experience and prior knowledge about Mitterrand and his politics. The questionnaire was composed of different sets of items: (1) flashbulb memory attributes, (2) confidence about the flashbulb memory attributes, (3) memory for the original event, (4) negative emotional feeling state, (5) surprise, (6) appraisal of novelty, (7) appraisal of importance, (8) rehearsal and rumination, (9) prior knowledge, (10) personal interest, and (11) attitudes.

1. Flashbulb memory attributes. The flashbulb memory measures investigated the recall of the circumstances in which participants first learned about the event. The questions dealt with the exact time participants heard the news (date, day of week, and hour), the source of information (family, friends, colleagues, media), the place they were (country, city, room, or other kind of location, i.e. in the car), the other people they were with, their ongoing activity, and the degree of changes in their ongoing activity following the announcement. These questions correspond to the canonical categories of flashbulb memories (Bohannon, 1988; Brown & Kulik, 1977; Conway et al., 1994; Finkenauer et al., 1998).

For all the questions, answers scored 1 when mentioned, 0 when missing. For the date question, the answer scored 2 when it included the year, the month, and the day the respondent heard about the news. It scored 1 when it included only the year and the month, and 0 when no answer was

provided. For the hour question, the answer scored 2 when an hour was mentioned, 1 when only the part of the day was mentioned, and 0 when no answer was provided.

Respondents were asked to list additional details (with a maximum of 5) of the personal reception context in which they first heard the news. In order to rule out details just inferred on the basis of participants' familiarity with the environment, each listed detail was scored 1 if it met one of the following criteria, 0 otherwise. The criteria used to score details were: (1) to include a changeable aspect of the environment (e.g., ''it was raining'' = 1; ''a green carpet in living room'' = 0); (2) to refer to the respondent him/herself or his/her position in the environment (e.g., ''I was sitting on a chair near to the radio'') (see also Finkenauer et al., 1998).

The variable assessing the source of information was not included among the flashbulb indicators as a ceiling effect was found for its distribution, that is, almost everybody remembered how she/he heard the news. We therefore collapsed the other six indicators into a single measure of flashbulb memory attributes (see later).

Consistency scores were also computed for the time, location, ongoing activity, other people present, details, and changes in ongoing activity measures. For each item, the responses at the first data collection and at the retest were compared. The value 2 was assigned if respondents provided exactly the same answer at the first data collection and at retest. The value 1 was assigned if the answers were substantially but not entirely identical, and 0 if the answers were totally different or missing at the retest.

2. Confidence. For each of the flashbulb memory attributes, participants rated the degree of confidence about their recollection on 7-point scales (1 = not at all, 7 = very much).

3. Memory for the original event. The memory for the event was assessed by three items concerning the exact time of the Mitterrand's death (date, day of week, and hour), the place where it happened, and the cause of death. Each answer to this set of questions was scored 2 if it was completely right, 1 if it was basically but not entirely correct (e.g. the answer about the cause of the death scored 2 for ''prostate cancer'', 1 for ''cancer'', 0 if it was wrong or missing).

Consistency scores were also computed for these measures. For each item the responses at the first data collection and at retest were compared: 2 was assigned if respondents provided exactly the same answer at both times of measurement, no matter whether this answer was right or wrong; 1 was assigned if the answers were substantially but not entirely identical, no matter whether they were right or wrong; 0 was assigned if the answers were totally different or missing at the retest.

4. Negative emotional feeling state. This component was assessed by asking respondents to rate on a 7-point scale (1 = not at all; 7 = very much) the extent to which they were upset by the news. Additionally, participants rated on three 7-point scales the impact of the news by assessing how much they felt (1) shaken (1 = not shaken at all; 7 = very shaken), (2) affected (1 = not affected at all; 7 = very affected), and (3) indifferent (1 = not indifferent at all; 7 = very indifferent). This last scale was inverted. Finally, respondents rated on 7-point scales (1 = not at all; 7 = very much) the degree to which they experienced eight basic negative emotions (anger, sadness, guilt, fear, anxiety, disgust, contempt, and shame).

5. Surprise. Respondents rated on five 7-point scales (1 = not at all; 7 = very much) to what extent they had experienced the news as (1) surprising, (2) expected, (3) foreseeable, (4) unbelieveable, and (5) astonishing. The items corresponding to the labels ''expected'' and ''foreseeable'' were inverted.

6. Appraisal of novelty. Respondents rated on eight 7-point scales (1 = not at all; 7 = very much) how (1) usual, (2) common, (3) current, (4) habitual, (5) unusual, (6) special, (7) uncommon, and (8) unique the event was for them. The items corresponding to the labels ''usual'', ''common'', ''current'', and ''habitual'' were inverted.

7. Appraisal of importance–consequentiality. Respondents rated the extent to which the event was important for themselves and their life on a 7-point scale (1 = not important at all, 7 = very important). Additionally, they rated to extent to which the original event had consequences for them on a 7-point scale (1 = no consequences at all, 7 = many consequences).

8. Rehearsal. Ten items assessed overt rehearsal. First, six items assessed the social sharing of the event with others. One item concerned the global frequency of conversations

about the original event. The next three items assessed the extent to which conversations concerned (1) specific facts about the original event, (2) personal reactions and feelings related to the event, and (3) information about the reception context. These items were all rated from 1 (never) to 5 (very often). Also participants indicated the number of people they shared the event with (1 = nobody, 6 = more than six persons), and the time elapsed until they shared for the first time on a 6-point scale (1 = immediately after, 6 = never). These items, except the one measuring the delay in sharing, were used to assess the social sharing of the experience. Second, three items referred to the frequency of rehearsal by the media. Participants rated how often they had followed the news (1) on TV, (2) on the radio, and (3) in the newspapers (1 = never, 5 = more than 10 times). Finally, the frequency of rumination was assessed by one item. Respondents rated on a 5-point scale (1 = never; 5 = more than six times) how many times they had had spontaneous thoughts or images about the event during the days following the event.

9. Prior knowledge. Respondents were questioned about the exact date of Mitterrand's election, the names of his seven Prime Ministers, and the years he was a candidate for the presidency. Specifically, with reference to the election date, participants were asked to indicate the exact day, month, and year Mitterrand became President of France. For each part of the date, the answers scored 1 when people remembered exactly, and 0 when the answers were incorrect or missing. The scores for this question ranged from 0 to 3. With reference to the question about the seven Prime Ministers, each correctly reported name scored 1, so the scores for this question ranged from 0 to 7. For the previous candidatures question, three years were listed and respondents had to indicate whether or not Mitterrand ran for the presidency in each of these years. Thus, the scores for this question ranged from 0 to 3.

10. Personal interest. Respondents rated their personal interest in French politics, and the extent to which they usually follow TV programmes and newspaper articles about French politics on three 7-point scales (1 = not at all, 7 = very much).

11. Attitudes. Participants rated on three 7-point scales (1 = not at all, 7 = very much) to what extent they (1) had sympathy for Mitterrand, (2) admired him, and (3) were favourable to his politics.

Procedure

Questionnaires were distributed to the participants 1–2 months after Mitterrand's death and again 1 year after the first data collection. Questionnaires distributed at the retest were identical to those distributed at the first data collection. Respondents were asked to recall their experience and to evaluate their emotional states and the related appraisals when the event took place. For the rehearsal measures, they were asked to give an estimate of the extent to which they shared and ruminated about the event in the weeks that immediately followed it. Finally, general measures of interest, attitudes, and knowledge about Mitterrand's politics were collected again.

Respondents were recruited among undergraduate psychology students, researchers from psychology departments, and experimenters' acquaintances. A preliminary short text explained that the questionnaire dealt with memories and personal reactions towards Mitterrand's death. Participants were told that there were no right and wrong answers to any of the questions, the study being concerned with the memory for mass media events.

Statistical analysis

In a first step, descriptive analyses were run on the measures corresponding to the memory for the original event, flashbulb memory attributes, and memory consistency. In a second step, measurement issues were considered for all variables used in the present study. Finally, structural analyses were carried through mixed-design analyses of variance models.

To deal with the measurement issue and in order to summarise each of the listed sets of indicators in single composite scores, principal components analyses of mixed measurement level data were performed by means of SPSS PRINCALS[2] routine. PRINCALS is an optimal scaling procedure (Young, 1981) aimed at looking for new scales as closely correlated as possible to a set of observed scores (Greenacre, 1993). This

[2] Principal non-linear component analysis by means of alternating least squares.

procedure was chosen because it allowed us to deal at the same time with nominal, ordinal, and numerical variables (Van de Geer, 1993; Young, 1981; Young, Takane, & De Leeuw, 1978). For instance, the variable assessing changes in ongoing activities is a nominal one with two levels (0 = no answer and 1 = mentioned activity), while the emotion indicators are numerical variables ranging from 1 to 7. For the purpose of consistency, we applied the same procedure to all variables in the questionnaire, even in the case of variables for which we had to summarise only numerical indicators to obtain a single composite measure.

Separate analyses were run on each set of indicators, and, for each set, only the solutions of unidimensional analyses were retained. We made this choice for two reasons. First, our purpose was to aggregate the observed data in synthetical measures. Second, for each set of variables, we found that the unidimensional solution was already a good approximation of the observed data.

The eigenvalues listed in Table 2 are measures of fit (contribution to the inertia) of the unidimensional solutions. Eigenvalues range from 0 to 1, where 0 means no fit and 1 the best possible fit. A fit of 1 means that the items considered are perfectly correlated and can be replaced by a single composite score (Greenacre, 1993, 1994). If an eigenvalue is 1, the composite score resulting from the scaling procedure is a perfect combination of the corresponding set of indicators. In as much as an eigenvalue is lower than 1, as Table 2 shows, the scaling is a slightly imperfect combination of the corresponding set of indicators in the analysis (Van de Geer, 1993). For each set of variables, we checked whether the contribution of the second dimension to the inertia of the solutions was more or less redundant with respect to the first one. For all sets this never happened, and only the unidimensional solutions were considered.

TABLE 2
PRINCALS eigenvalues

Composite variables	*Eigenvalues*
Flashbulb memory attributes	.500
Confidence	.466
Memory for the original event	.450
Flashbulb memory consistency	.421
Memory for the original event consistency	.412
Negative emotional feeling state	.708
Surprise	.561
Novelty	.459
Importance	.897
Rehearsal (social sharing)	.519
Rehearsal (by media)	.582
Prior knowledge	.607
Personal interest	.826
Attitude	.832

Eigenvalues are measures of fit (contribution to the inertia) of the unidimensional solutions. Eigenvalues range from 0 to 1, where 0 means no fit and 1 the best possible fit. A fit of 1 means that the items considered are perfectly correlated and can be replaced by a single composite score (Greenacre, 1993, 1994).

PRINCALS starts from the contingency matrix of the raw data which contains the frequencies of the observation categories for each variable in the set (Greenacre, 1984; Weller & Romney, 1990). Optimal scores are mathematically equivalent to the correlations of the observed scores to the dimensional solutions and they are related to the observed frequency of the categories of the variables (Greenacre, 1993). Comparable to ordinary correlation coefficients, optimal scores can be positive or negative in conformity with the direction of the correlation of the corresponding observed scores with the dimensional solution. For each set of indicators, an optimal score is associated to each respondent. To illustrate, a positive optimal score obtained by a respondent on the flashbulb memory attributes means that this respondent has a better memory than a respondent achieving a negative score. A negative optimal score on emotion means that the respondent experienced a lower emotional state than a respondent scoring positively on that variable. The saved optimal scores resulting from the analyses were used as the final measures for each set of variables. For rumination, we directly entered the raw scores in subsequent analyses, because only one item was used in the questionnaire to assess respondents' rumination about their experience.

The subsequent analyses were performed in order to test whether flashbulb memory attributes that referred to Mitterrand's death and their encoding and rehearsal determinants were affected by the provenance of the subgroups and by changes over time. The optimal scores for each set of variables were first analysed in a 2×2 mixed-design analysis of variance, where provenance (i.e., French vs Belgians) was the between-subjects factor, and test–retest was the within-subject factor (i.e., 1–2 months after the event vs 13–14 months after the event). Then, optimal scores resulting from the consistency measures were analysed by two separate one-way analyses

of variance, where provenance (i.e., French vs Belgians) was the independent variable. Respondents' gender and age were included as covariates in all comparisons, as the two groups of French and Belgian respondents appeared different with respect to these characteristics. The corresponding effects are reported only if significant. Otherwise, the covariates were dropped from the analysis and only the main effects and interaction effects were considered.

Given the high number of multiple comparisons on the scores and in order to reduce the possibility of type I errors, we used Bonferroni's adjustment by setting the significance level at value of $p = .001$.[3] As a consequence, comparisons significant at $p > .001$ level were not considered. Effect sizes were also computed for all the comparisons.

RESULTS

Descriptive analyses

Figure 1 shows the percentages of participants who were able to answer the questions about memory for the original event. These percentages are very high (about 94% of respondents) for memory for the cause of Mitterrand's death, both at the first data collection and at the retest. Figure 1 also shows the percentages of people answering the questions on the flashbulb memory attributes. For all attributes, percentages exceed 60% of respondents both at the first data collection and at the retest.

Consistency scores were computed for memory for the original event and for the flashbulb memory attributes. As Figure 2 shows, percentages are very high especially for memory for the time and cause of the event (respectively, 72.3% and 88.6% of respondents), and for the flashbulb memory attributes of time, place, and other people present (respectively, 74.2%, 97.4%, and 68.6% of respondents).

Taken together, these results indicate that, in general, a high number of respondents retained at least some details of the event and flashbulb memory attributes. Furthermore, many memory attributes showed temporal consistency. As a consequence, the following step was to check whether these memory attributes and the impact of the encoding and rehearsal variables would differ with respect to the provenance of the groups.

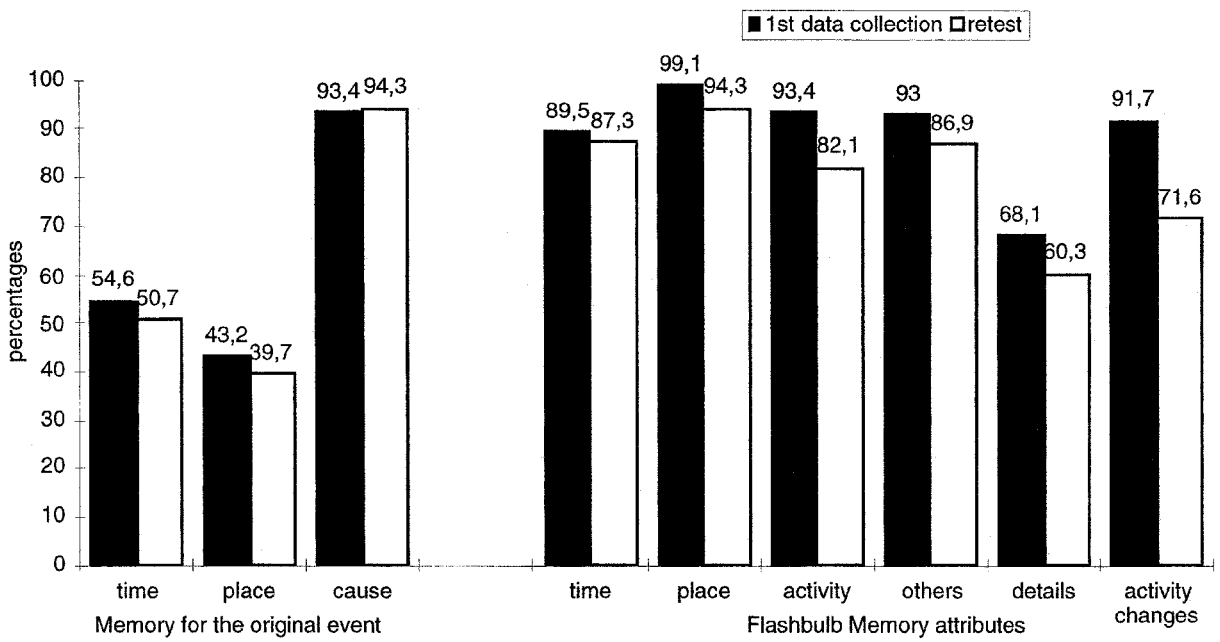

Figure 1. Percentages of responses for memory for the original event and for flashbulb memory attributes.

[3] Bonferroni's adjustment led to the threshold of $p = .003$, as the significance level of .05 is divided by the number of the multiple comparisons on the PRINCALS scores (i.e. 13 + 2, see Tables 3 and 4). Nevertheless we preferred to use a more conservative approach and we lowered the p level to .001.

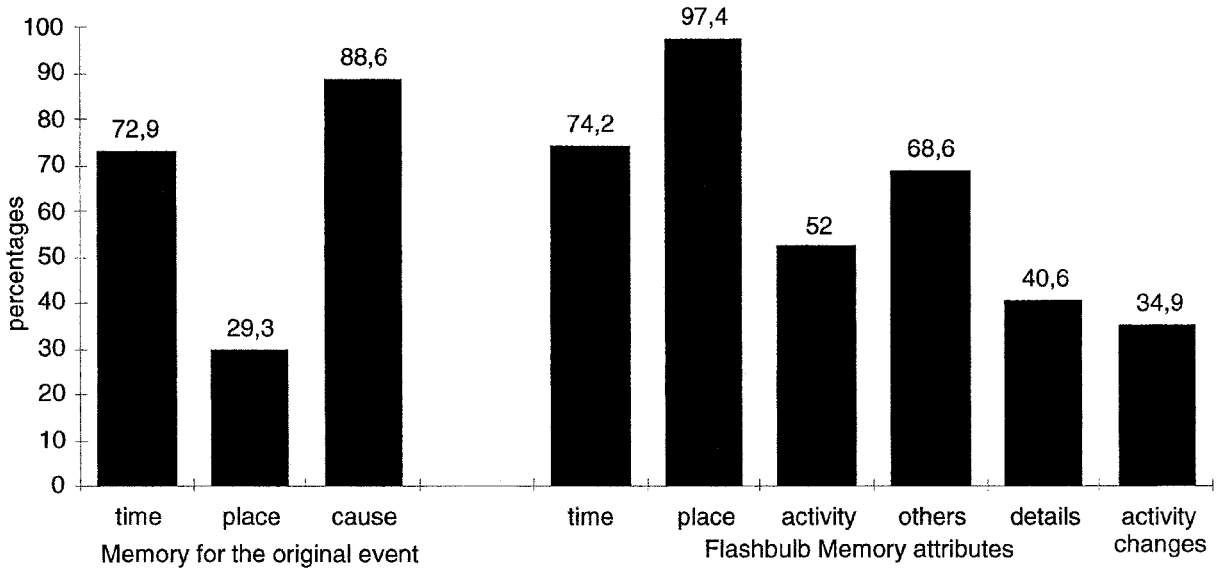

Figure 2. Percentages of consistency scores for memory for the original event and for flashbulb memory attributes.

Analyses of emotional feeling state

A MANOVA was run on the emotional feeling state raw scores, with type of emotion (eight levels) and test–retest factor (two levels) as within-subject factors and provenance (two levels) as between-subjects factor. Figure 3 provides a visual display of the main effect of the type of emotion on the intensity of the emotional feeling state, both for the first data collection and the retest, F (7, 1449) = 66.31, $p < .001$. Neither provenance nor test–retest effects were found on the negative emotional feeling states. In other words, French and Belgians' emotional feelings about the death of Mitterrand were really close and did not differ over time. Finally, all interactions were non significant—except for the interaction effect of provenance by type of emotion, $F(7, 1449) = 4.27, p < .001$. Sadness was the most intense emotion felt by participants, both at the first data collection and at the retest, and French were more affected by this emotional state than Belgians, F (1, 207) = 6.24, $p < .02$.

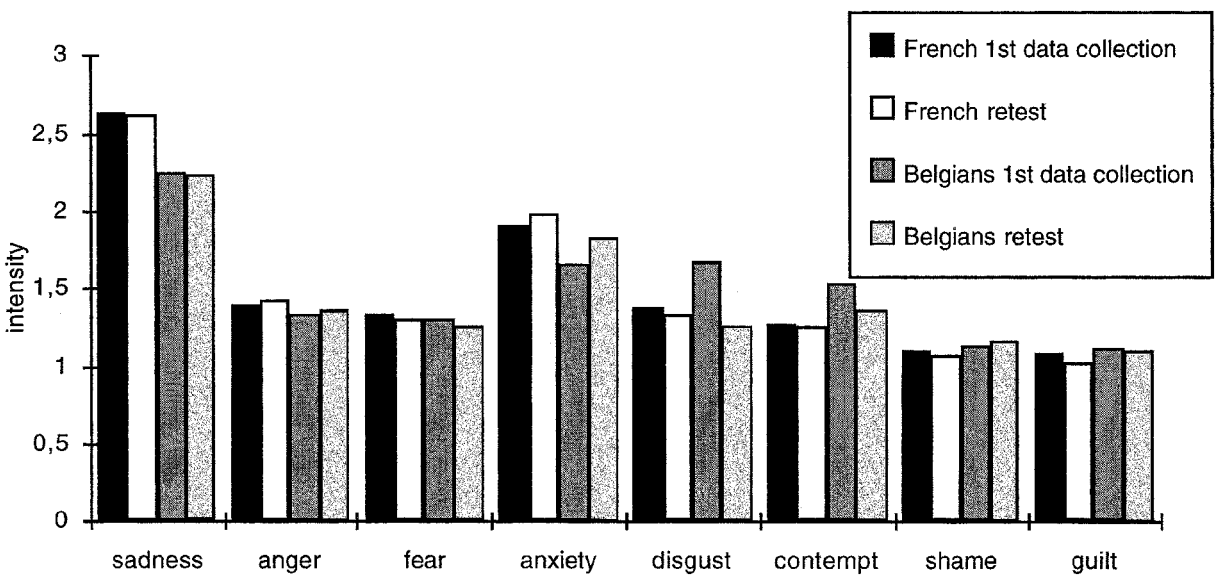

Figure 3. Negative emotional states as a function of group provenance and time of data collection.

Analyses by provenance

Flashbulb memory attributes, confidence, and memory for the event. Table 3 shows the results from the analyses on the PRINCALS optimal scores. As can be seen, the provenance of the subgroups had an effect on a large number of the dependent variables investigated.

Figure 4 displays the mean differences between French and Belgian respondents for all PRINCALS scores entered in the MANOVAs. Mean differences for flashbulb memory attributes, memory for the original event, and confidence were significantly higher for French respondents. Thus, confirming our predictions, the flashbulb memory attributes were better remembered by the French group than by the Belgians. As expected, the former group was also more confident about its recollections and exhibited a better memory for the original event.

Emotion, surprise, and appraisal of novelty and importance. As Figure 4 shows, the highest mean differences between French and Belgian respondents were found for negative emotional states and appraisal of importance. As predicted, the French group, compared to the Belgian group, was significantly more emotionally involved on hearing the news, and rated the event as significantly more important. However, no significant effects were found for surprise, except for age of the respondents, which was found to positively influence the respondents' level of surprise, $\beta = .340$, $t\ (227) = 5.376$, $p < .001$. Thus, older people experienced a greater level of surprise on hearing the news than younger people, but this effect of age did not interact with provenance. The difference between French and Belgians was not found to be significant even after controlling for the respondents' age.

Finally, for novelty appraisal the effect of provenance just approached the fixed significance level, $F\ (1, 222) = 10.30$, $p = .002$, $r = .211$, with the French scoring higher on this variable.

Rehearsal, prior knowledge, and attitudes. French participants shared the experience to a greater extent than Belgian participants (see also Figure 4). The sharing scores aggregated different aspects of the phenomenon, i.e. the global frequency of conversations about the original event, the sharing of specific facts about the original event, the sharing of personal reactions related to the event, and the sharing of information about the reception context. The two groups were expected to differ greatly on the sharing of personal reactions, because of the greater emotional involvement of French respondents. To compare across groups each aspect of sharing, a MANOVA was run separately on the four raw measures of sharing, with provenance (two levels) as between-subjects factor and the test–retest

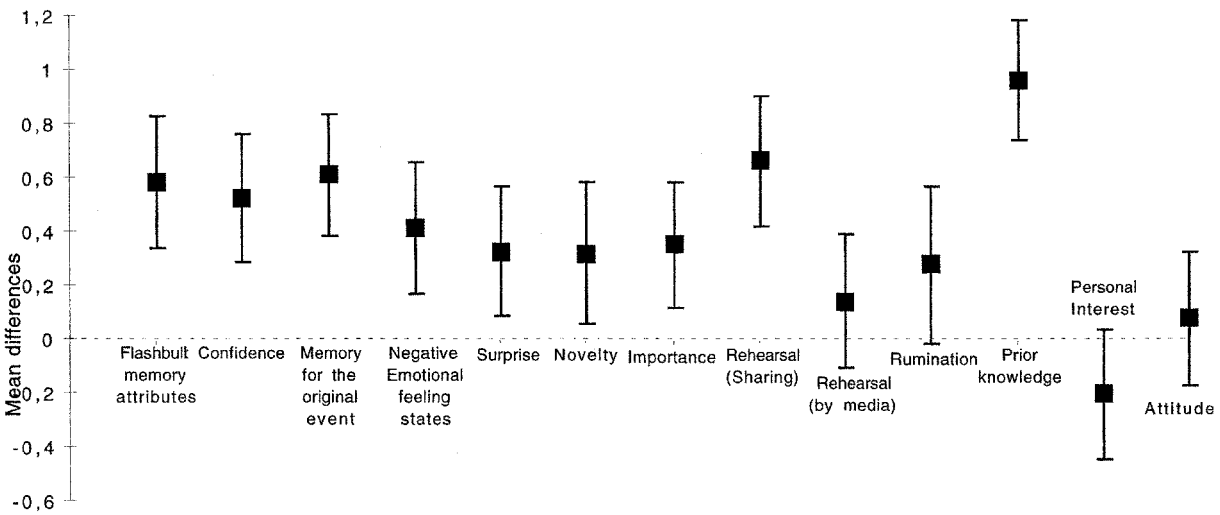

Figure 4. Mean differences between French and Belgian participants for all PRINCALS scores entered in the MANOVAs. Points represent the differences between the means of the French respondents and the means of the Belgian respondents; vertical lines depict confidence intervals of the mean differences. A positive mean difference indicates that the French scored higher than the Belgians on that measure; on the contrary, a negative mean difference indicates that Belgians scored higher than French respondents on that measure.

TABLE 3
MANOVAs on the PRINCALS optimal scores (provenance by test–retest factor)

	Provenance				*Test–retest*				*Interaction*				
FBM features	F (df)	*M (Fr)* (SD)	*M (Be)* (SD)	*effect size* (r)	F (df)	*M (t1)* (SD)	*M (t2)* (SD)	*effect size* (r)	F (df)	*M (Fr-t1)* (SD)	*M (Be-t1)* (SD)	*M (Fr-t2)* (SD)	*M (Be-t2)* (SD)
Flashbulb attributes	28.08* (1, 227)	.269 (.693)	−.318 (1.198)	.332	53.22* (1, 227)	.205 (.797)	−.205 (1.135)	.234	.57 (1, 227)	.454 (.448)	−.090 (.997)	.084 (.834)	−.546 (1.336)
Confidence	25.73* (1, 227)	.242 (.921)	−.285 (1.019)	.319	44.34* (1, 227)	.233 (.945)	−.233 (1.004)	.404	.98 (1, 227)	.505 (.866)	−.089 (.936)	−.023 (.902)	−481 (1.064)
Memory for the event	32.61* (1, 227)	.281 (1.069)	−.332 (.796)	.354	1.04 (1, 227)	.039 (1.027)	−.039 (.975)	.034	2.68 (1, 227)	.370 (1.097)	−.353 (.775)	.192 (1.038)	−.312 (.818)
Negative emotional feeling state	10.87* (1, 227)	.190 (1.007)	−.222 (1.016)	.214	2.95 (1, 227)	−.040 (1.053)	.042 (1.009)	.057	.37 (1, 227)	.163 (1.043)	−.279 (1.019)	.217 (.973)	−.165 (1.015)
Surprise[1]	2.60 (1, 226)	.146 (.991)	−.182 (.993)	.107	1.46 (1, 227)	0.34 (1.010)	.026 (1.000)	.040	1.13 (1, 227)	−.142 (1.003)	.243 (.984)	−.150 (.984)	.121 (1.003)
Novelty	10.30 (1, 222)	.133 (1.034)	−.188 (1.126)	.211	.07 (1, 222)	−.035 (1.123)	0.11 (1.052)	.009	2.19 (1, 222)	.043 (1.166)	−.188 (1.126)	.224 (.878)	−.254 (1.185)
Importance	12.68* (1, 224)	.158 (1.144)	−.193 (.757)	.232	13.99* (1, 224)	−.170 (.927)	.169 (1.047)	.123	.56 (1, 224)	−.038 (1.060)	−.326 (.713)	.355 (1.195)	−.057 (.780)
Rehearsal (Sharing)	40.47* (1, 223)	.287 (.938)	−.375 (1.045)	.392	1.77 (1, 223)	.024 (1.026)	−.052 (1.056)	.044	.00 (1, 223)	.341 (.876)	−.350 (1.068)	.233 (.996)	−.402 (1.025)
Rehearsal (by media)	1.39 (1, 222)	.065 (1.038)	−.077 (.980)	.079	.00 (1, 222)	−.010 (.995)	.012 (1.035)	.000	.37 (1, 222)	.040 (1.014)	−.069 (.974)	.091 (1.066)	−.085 (.992)
Rumination[2]	7.85 (1, 207)	2.656 (1.285)	2.381 (1.184)	.191	.48 (1, 207)	2.555 (1.267)	2.502 (1.217)	.023	.012 (1, 207)	2.679 (1.297)	2.412 (1.223)	2.634 (1.266)	2.351 (1.146)
Prior knowledge[1]	88.64* (1, 226)	.437 (.772)	−.526 (1.001)	.531	11.50* (1, 227)	.058 (.977)	−.067 (1.032)	.111	1.76 (1, 227)	.476 (.729)	−.436 (1.004)	.397 (.814)	−.616 (.994)
Personal interest	3.18 (1, 225)	−.094 (.948)	.109 (1.056)	.118	.08 (1, 225)	−.012 (1.027)	.009 (.980)	.009	.04 (1, 225)	−.097 (.979)	.089 (1.078)	−.091 (.921)	.129 (1.038)
Attitude	.33 (1, 223)	.027 (1.044)	−.051 (.957)	.038	.03 (1, 223)	−.010 (1.033)	−.007 (.979)	.006	.02 (1, 223)	−.029 (1.069)	−.056 (.993)	.025 (1.023)	−.046 (.924)

* $p < .001$.

Fr = French group, Be = Belgian group, t1 = 1–2 months after Mitterrand's death, t2 = 1 year after first data collection, Fr-t1 = French group 1–2 months after Mitterrand's death, Be-t1 = Belgian group 1–2 months after Mitterrand's death, Fr-t2 = French group 1 year after first data collection, Be-t2 = Belgian group 1 year after first data collection.

[1] The comparison was controlled for respondents' age.

[2] Raw scores, with range 1–7.

factor (two levels) as within-subject factor. The results of this MANOVA are shown in Table 4. The French always had higher scores than the Belgians on all four measures of sharing, but for the first measure of sharing (i.e., the frequency of conversations about the original event) the main effect of provenance was significant; for the other three measures the results just approached the significance level ($p \leq .006$). This indicates that, in sharing their experience, French respondents did not seem to prefer certain topics of conversation over others. In the present study, social sharing seemed a rather homogeneous phenomenon more intensely experienced by French people.

A shorter delay elapsed before French participants spoke about the event as compared to Belgian ones, χ^2 (5, N = 442) = 17.93, $p < .005$). However, rehearsal by the media and mental rumination about the event were not affected by the provenance of the group.

Finally, French participants showed better prior knowledge about Mitterrand and his political actions than Belgian participants. Controlling for respondents' age, this effect remained significant although prior knowledge was found to be positively related to respondents' age, $\beta = .195$, t (227) = 3.382, $p = .001$. Contrary to expectations, Belgians scored higher on personal interest in French politics than French respondents, even though there was no significant effect of provenance on this measure and on attitudes towards Mitterrand.

Analyses by test–retest factor

Flashbulb memory attributes, confidence, and memory for the event. Memory for the flashbulb attributes was impaired over time, and, contrary to expectations, people's confidence about their recollections also diminished as time passed. As predicted, there was no significant effect of the test–retest factor on memory for the event.

Figure 5 displays the mean differences between the two data collections for all PRINCALS scores entered in the MANOVAs. It is evident that higher differences were found for flashbulb memory attributes and confidence.

Emotion, surprise, and appraisals of novelty and importance. The ratings of negative emotional feeling state, surprise, and novelty did not change over time. Contrasting with these results, importance assessed at the retest was significantly higher than when assessed at the first data collection (see also Figure 5). Thus, despite the impairment of memory for flashbulb attributes and of feeling of confidence, the encoding factors traditionally regarded as flashbulb memory predictors kept their impact stable over time.

Rehearsal, prior knowledge, and attitudes. The ratings of amount of social sharing about Mitterrand's death, delay before the first sharing, frequency of rehearsal by media, and rumination remained unchanged with time. In other words,

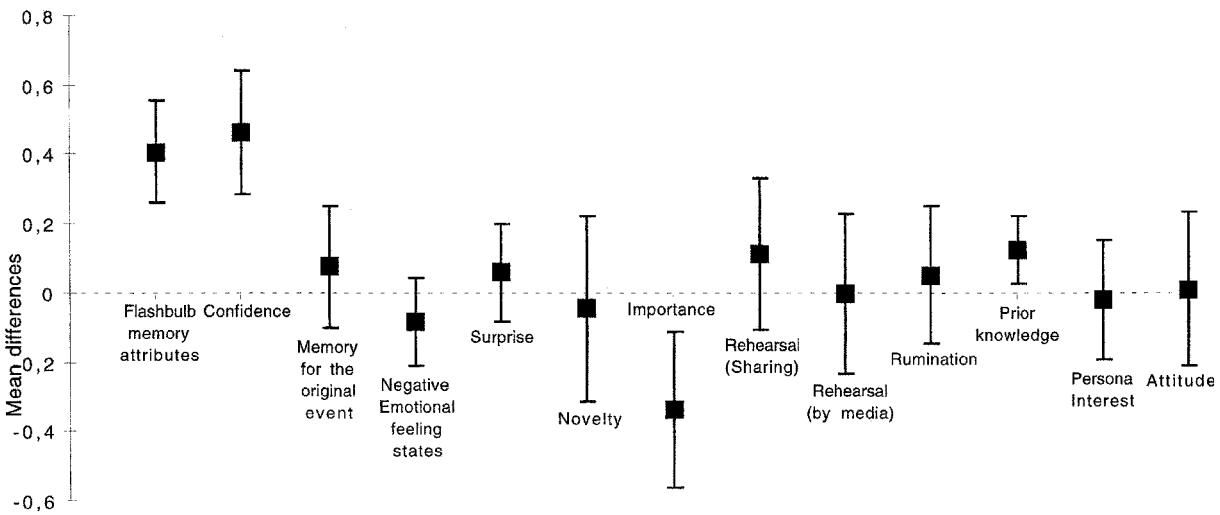

Figure 5. Mean differences between the two data collections for all PRINCALS scores entered in the MANOVAs. Points represent the differences between the means at the first data collection and the means at the retest; vertical lines depict confidence intervals of the mean differences. A positive mean difference indicates that scores from the first data collection were higher than scores at the retest; on the contrary, a negative mean difference indicates that scores at the retest were higher than scores at the first data collection.

TABLE 4
MANOVA on the social sharing measures

	Provenance				*Test–retest*				*Interaction*				
Sharing measures	F (df)	*M (Fr)* (SD)	*M (Be)* (SD)	*effect size* (r)	F (df)	*M (t1)* (SD)	*M (t2)* (SD)	*effect size* (r)	F (df)	*M (Fr-t1)* (SD)	*M (Be-t1)* (SD)	*M (Fr-t2)* (SD)	*M (Be-t2)* (SD)
Global frequency	17.62* (1, 206)	3.792 (1.106)	3.163 (1.185)	.281	4.27 (1, 206)	3.507 (1.209)	3.441 (1.155)	.072	.41 (1, 206)	3.846 (1.124)	3.248 (1.231)	3.738 (1.089)	3.071 (1.133)
Sharing event	11.52 (1, 206)	3.621 (.947)	3.244 (.983)	.230	.74 (1, 206)	3.427 (1.029)	3.475 (.930)	.030	.74 (1, 206)	3.610 (.980)	3.206 (1.047)	3.633 (.916)	3.283 (.915)
Sharing emotional reactions	7.84 (1, 206)	2.591 (1.135)	2.207 (1.120)	.192	3.46 (1, 206)	2.484 (1.154)	2.346 (1.130)	.065	.06 (1, 206)	2.656 (1.170)	2.282 (1.106)	2.525 (1.100)	2.130 (1.134)
Sharing context	8.08 (1, 206)	2.129 (1.061)	1.746 (.895)	.194	4.56 (1, 206)	1.874 (.960)	2.037 (1.047)	.074	.08 (1, 206)	2.033 (1.024)	1.686 (.844)	2.227 (1.093)	1.808 (.944)

* $p < .001$.

Fr = French group, Be = Belgian group, t1 = 1–2 months after Mitterrand's death, t2 = 1 year after first data collection, Fr-t1 = French group 1–2 months after Mitterrand's death, Be-t1 = Belgian group 1–2 months after Mitterrand's death, Fr-t2 = French group 1 year after first data collection, Be-t2 = Belgian group 1 year after first data collection.

evaluations of the amount of rehearsal were consistent over time, as respondents were questioned about their sharing and rumination about the event in the weeks immediately following it, both at the first data collection and the retest. Prior knowledge about Mitterrand and his politics was impaired, while there were no effects of the test–retest factor on the variables assessing personal interest and attitudes towards Mitterrand. Thus, the only mean difference between the two data collections found to be significant was that for prior knowledge scores (see Figure 5), while people's ratings about the other social determinants of flashbulb memories were not affected by time. No interaction effect of provenance by test–retest factor was found for any of the composite measures used in the present study.

Analyses of consistency

Finally, two one-way ANOVAs with provenance (two levels) as the independent factor were run on the PRINCALS optimal scores for the consistency measures. Table 5 summarises the results obtained. The French had higher scores than the Belgians for memory for the original event consistency, suggesting that this aspect of memory remained more stable over time for French people. For the flashbulb memory attributes, however, the comparison between the groups did not reach significance level, indicating that the two groups did not differ on the consistency of their memories for the reception context.

DISCUSSION

A first aim of the present study was to examine in more detail how flashbulb memories vary across social groups. Memory for President Mitterrand's death was investigated in two ''national groups'', of French and Belgian citizens. Flashbulb memory attributes, confidence in flashbulb memory, memory for the original event, emotional determinants, rehearsal, and previous knowledge about Mitterrand were compared across groups.

The present study focused on the impact of variables that were assessed as structural features of flashbulb memory by previous studies (Finkenauer et al., 1998). The theoretical variables involved in the formation and maintenance of flashbulb memory were measured by nominal and numerical indicators, and the PRINCALS approach was chosen for aggregation purposes. This approach allowed us to summarise all measures in composite variables and to compare these variables across groups.

TABLE 5
One-way analysis of variance on the PRINCALS optimal scores for the consistency measures

Consistency features	F (df)	*Provenance* M (Fr) (SD)	M (Be) (SD)	*Effect size* (r)
Memory for the event consistency	25.11* (1, 227)	.290 (.996)	−.343 (.900)	.316
Flashbulb memory consistency	9.27 (1, 227)	.182 (.994)	−.215 (.973)	.198

* $p < .001$
Fr = French group, Be = Belgian group.

Flashbulb memories for expected events

The present study found high percentages of people answering the questions about the canonical categories of the reception context. The fact that the death of Mitterrand was expected because of his serious illness did not seem to make a difference to the frequencies of these answers. In other words, recollection may score highly on flashbulb memory attributes, even if the eliciting event does not strictly have all the characteristics required by the flashbulb memory literature (Brown & Kulik, 1977).

The research on flashbulb memories has generally dealt with unexpected events. Yet, as Pillemer suggested (1984), the findings on flashbulb memories need to be generalised by examining a variety of everyday memories. Some authors have already extended the research to expected and predictable events, such as the death of the Spanish dictator Francisco Franco, the American attack on Iraq during the Gulf War, or the resignation of the Italian judge Antonio Di Pietro (Bellelli, 1999; Morse, Woodward, & Zweigenhaft, 1993; Neisser, 1982; Ruiz-Vargas, 1993; Weaver, 1993). The present study represents a new attempt to generalise the findings on flashbulb memory for unexpected events to memory for expected events.

Concerns, emotions, and flashbulb memories

The present study shows that memories for the original event, flashbulb memory attributes, and confidence ratings were generally higher for

French people, whose recollections of the original event were also more consistent. French people showed a stronger intensity of emotion, importance, and social sharing, and had more prior knowledge about Mitterrand and his politics. Time decreased the strength of the flashbulb memory attributes, confidence, and prior knowledge about Mitterrand, but increased the related importance ratings. Finally, no interaction effect of provenance by time was found in our data set.

In order to understand these findings, the theoretical construct of concerns can be taken into account. This construct allows us to link the research on flashbulb memory to research on the cognitive determinants of emotion (Frijda, 1987; Frijda et al., 1989; Scherer, 1984, 1997; Smith & Ellsworth, 1985). Concerns are hypothetical constructs which are defined as motives or reasons for striving to reach or maintain a given state favourable to the individual (Frijda, 1994). In this sense, they can be viewed as the most basic antecedents of emotional experience: They direct the cognitive appraisal of the original event, and then elicit differentiated subjective feeling states. In other words, an event is appraised as emotionally relevant and has an emotional impact on the individual only if it favours or harms the individual's concerns (Frijda, 1994; Frijda et al., 1989).

The effect of concerns is not limited to personal emotional events. The impact of public events is determined by the degree to which these events affect people's concerns. Appraisals of public events stem from the attempts people make to protect or promote their own concerns. Different social groups might be differently concerned by the same public event (Ciompi, 1997; Kenwyn & Crandell, 1984). For instance, the death of a well-known politician in one country does not concern people from other countries to the same extent. People whose political leader dies are likely to have been more affected by his or her politics, and are therefore likely to experience the effects of the leader's death much more than people of foreign countries. Although foreign people could appreciate the relevance of the leader's politics as regards international matters, their ratings will always reflect the outsider's perspective. People from different social groups form and maintain memories for important public events whose intensity varies as a function of their own group concerns.

In the present study, we based our predictions on the assumption that the two national groups of French and Belgians differ with respect to their concern in the original event. French citizens were assumed to have been more concerned by Mitterrand's death because of the direct impact Mitterrand's politics had on them. The differences in concerns between the two national groups were hypothesised to account for the different extent to which the two groups recalled the news and the different impact of the encoding and rehearsal determinants of flashbulb memories.

The memory for Mitterrand's death and the flashbulb attributes were stronger for the French participants. As expected, flashbulb memories for this event were more prominent for the group more concerned by Mitterrand's politics. The French respondents were also more consistent in their memory for the original event, but, contrary to expectations, they did not differ from the Belgian respondents with respect to their consistency for the flashbulb memory attributes. The feeling of confidence, which is among the main features of flashbulb memories (Brown & Kulik, 1977; Neisser & Harsch, 1992), was higher for the French respondents but decreased over time for both groups. Time seemed to have weakened the memory for the flashbulb attributes and people were aware of their forgetting. Despite the high level of confidence people exhibited shortly after the event, flashbulb memories then seemed prone to decay, thus sharing the same destiny as ordinary memories.

Flashbulb memory and its emotional determinants

The fact that the French respondents had a stronger memory for the original event and the flashbulb memory attributes at least shortly after the event enabled us to examine more closely the impact of the supposed encoding and rehearsal determinants of flashbulb memory. More specifically, the present study also aimed to examine whether there were any differences between the two groups on the encoding and rehearsal factors usually related to flashbulb memory.

As expected, and consistent with the assumption that the French respondents were more concerned than the Belgian respondents, the emotional impact of the news was stronger for the French group. With respect to the type of emotion felt after the news, sadness was the most intensely experienced emotion. French respondents, who were assumed to be the most concerned, also experienced the highest level of sadness. Having

adopted the theoretical perspective about concerns, it follows that concerns should primarily affect appraisals, which, in turn, determine emotional responses (Frijda, 1987; Frijda et al., 1989; Scherer, 1984, 1997; Smith & Ellsworth, 1985). The present study focused on the novelty and importance appraisal of the news. Although no differences were found between the two groups for novelty, importance was higher for the French respondents. The absence of difference on novelty between the two groups can be explained by the fact that people appraise the novelty of a news item independently from their own concerns about it. The appraisal of novelty theoretically precedes all the other appraisal dimensions (Leventhal & Scherer, 1987). It can be considered as a very primary process that merely serves as an orientation reaction. In this sense, the personal and social concerns with respect to the news may only have affected the cognitive appraisal of the news at a secondary level. For importance, ratings increased for both groups as time passed. It seems that the long-term consequences of the death were more seriously appraised by people. Another explanation of why importance increases could be that only after some time are people able to appreciate the differences that arose after Mitterrand died. Some changes in politics could have been implemented that seem very different, but people can only evaluate these differences after one year or more.

Flashbulb memory and its social determinants

With respect to the social determinants of flashbulb memory, the present study showed only a main effect of provenance on social sharing. French respondents shared their experience to a larger extent than Belgian respondents, without discriminating between factual aspects, emotional features, or contextual information. Sharing was a widespread phenomenon that encompassed different aspects. French respondents showed the highest scores for all four investigated features of sharing, indicating that their discussions focused on a large variety of topics. On the contrary, rumination and rehearsal through the media did not differ across the provenance of the subgroups and did not change over time. It could be argued that French respondents shared the news more frequently for two reasons. First, they may have had a greater urge to share the news with others. Second, their social environment may have invited more sharing and discussion of the news. Therefore, the social availability of commentaries about a public event can be hypothesised to affect the frequency of social sharing of the news (Bellelli, 1999).

This explanation is also supported by the fact that French respondents showed better prior knowledge about Mitterrand and his politics. Mitterrand was a well-known politician whose political activities affected French societal life for many years. French respondents had better knowledge of Mitterrand than Belgian respondents independent of their attitudes towards him and their personal interest in French politics. Information about Mitterrand and his political activity as more available in the French context. As a consequence, opportunities for conversations about him and the consequences of his death may have increased shortly after the event.

Destiny of flashbulb memory

Finally, the present study also supports the idea that flashbulb memories are not immune to forgetting (Christianson, 1989; Christianson & Engelberg, 1999; Weaver, 1993). They share the same long-term destiny as ordinary memories. In other words, these memories are affected by temporal modifications, as are any ordinary memories, and as a consequence they are not as special as some authors have suggested (Brown & Kulik, 1977; Conway, 1995).

Consistency of the flashbulb attributes for the French group was not significantly higher than their consistency for the Belgian group. Flashbulb memory attributes were impaired over time and the lack of interaction effects of time by provenance on the flashbulb attributes showed that decay of memory did not differ across the two groups. On the contrary, the memory for the original event remained stable for both groups, but the French were more consistent than the Belgians about their remembering. As Larsen suggested (1992), memory for the event could be enhanced to some extent by the public importance of the news. This explanation fits well with the present study where the most concerned participants showed the highest consistency on memory for the event, but time had the same effect on flashbulb memory attributes as on the ordinary memories.

According to the literature, flashbulb memories are characterised by the great confidence

people exhibit in their recollections (Brown & Kulik, 1977). In the present study, however, confidence decreased over time, independent of the provenance of the respondents. As expected, negative emotional feeling state, rehearsal of the experience (i.e., social sharing, following media, and rumination), and interest and attitudes towards Mitterrand were not affected by time. Only importance was higher at the retest. These results suggest that people are very capable of remembering their emotions and the emotional aftermath of an event. Although they may forget details, they seem to continue to remember accurately how they felt and how they reacted for some time (Christianson & Engelberg, 1999). Some authors have argued that studies based on recall are highly prone to retrospective bias (Ross, 1989). In the present study, retrospective bias does not seem to play an important role in distorting memories for emotional experiences, at least when the recall interval does not exceed one year. Thus, the findings of the present study are noteworthy in that they support to some extent the use of recall procedures.

CONCLUSIONS

The present study attempted to discriminate the impact of flashbulb memory attributes and their encoding and rehearsal determinants in two different national groups. The results partly confirmed the hypotheses: French respondents experienced a stronger memory for the original event and the Flashbulb memory attributes. They were more confident about their recollections and their memories for the original event were also highly consistent. Their ratings were higher for both the emotional (i.e., emotional feelings and importance appraisal) and social determinants (i.e., social sharing and prior knowledge). Time did not seem to have any impact on these determinants—except on importance and prior knowledge—but it impaired memory for the flashbulb attributes and confidence ratings across the two groups.

The results of the present study are also consistent with some of the findings of the model of flashbulb memory formation developed by Finkenauer et al. (1998). In both studies, the emotional and social determinants of flashbulb memories had a stronger effect for people assumed to be the most concerned by the original news.

Recently, research about this topic has focused on structural models of formation and maintenance without any reference to the mean structure of the interacting factors. The present findings suggest that flashbulb memory differs not only qualitatively but also quantitatively as a function of variables associated with respondents' provenance. Although further research still needs to investigate the relationships among variables in order to explain the complex phenomenon of flashbulb memories, studies should also take the influence of potential moderators into account, such as personal and social concerns.

Finally, further research should investigate the direct effects of concerns on memory. Flashbulb memories decay in a fashion comparable to ordinary memories. Moreover, they seem to decay independent of people's concerns for the original event. Indeed, forgetting of flashbulb memories occurred in both national groups. Therefore, flashbulb memories seem not to be as special as short-term investigation suggests (Christianson, 1989). Research should directly focus on the investigation of concerns by including some direct measures of them (such as those assessed by the Concern Strength and Concern Relevance questionnaires; see Sonnemans & Frijda, 1995). In addition, research should better explore the short- and long-term relationship between concerns and memory, with reference to different kind of original events.

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